

What is claimed is:

WEM-05001

1. A portable electrical control and display device comprising:

an indicator panel;

5 a keyboard with at least one key pad; and

a housing that is a single, one-piece housing made of a temperature-resistant material
sealing the control and display device in a water-tight manner.

2. A control and display device according to Claim 1,

10 wherein the one-piece housing is made of a single, injection molded thermoplastic material.

3. A control and display device according to Claim 2, wherein at least part of the
housing includes one of TPU, TPE, and PVC.

15 4. A control and display device according to Claim 3, wherein a sleeve is provided
to accommodate the indicator panel, the keyboard, and a circuit board, and to support the
housing.

20 5. A control and display device according to Claim 4, wherein the housing and the
sleeve are similar in shape, and the housing encloses the sleeve in an essentially form-fitting
manner.

6. A control and display device according to Claim 5, further including at least one sealing device which closes the housing and the sleeve in a water-tight manner with respect to the outside.

5

7. A control and display device according to Claim 6, wherein the at least one sealing device is designed so that a first direction of sealing forces determined by the at least one sealing device is essentially perpendicular to a second direction of joining forces determined by one of a direction of insertion of the housing into the sleeve, and a direction of insertion of the sleeve into the housing.

10

8. A control and display device according to Claim 7, wherein the at least one sealing device has a peripheral groove and a matching peripheral ridge arranged at opposite locations on the sleeve and the housing so that when the housing and the sleeve are joined together, the ridge engages in the groove.

15

9. A control and display device according to Claim 8, further including at least one sealing lip applied to one of the groove and the ridge and stands apart therefrom, the at least one sealing lip being engaged when the housing and the sleeve are joined together.

20

10. A control and display device according to Claim 9, wherein the at least one

sealing lip is one of a wedge, rib, nub, and pointed tip shape.

11. A control and display device according to Claim 10, wherein the at least one
sealing device includes one of a plug and ring which can be pushed into one of: the housing open
5 on at least one side, and a sleeve, said one of a plug and a ring engaging in said one of the
housing and the sleeve when pushed in.

12. A control and display device according to Claim 11, wherein one of the plug and
the ring is cylindrical in shape, tapering in the direction of insertion.

10

13. A control and display device according to Claim 12, wherein the at least one
sealing device includes a ring having support devices for maintaining stability of the ring when
pushed into one of the housing and sleeve.

14. A control and display device according to Claim 13, further including one of
15 plugs and rings having one of pointed tips, nubs, peripheral ribs, and wedges protruding
outward.

15. A control and display device according to Claim 14, wherein
20 the at least one sealing device includes a snap-in device.

16. A control and display device according to Claim 15, wherein the housing and the at least one sealing device which seals the housing are cleaning-machine resistant and temperature resistant to a temperature of at least 70 degrees Celcius.

5

17. A control and display device according to Claim 16, wherein the housing is at least partially made of one of one of a transparent material and semi-transparent material.

18. A control and display device according to Claim 17, wherein the housing is at least partially made of a colored material and is provided with a transparent protective sight glass connected to the housing via a water-tight connection in the area of the indicator panel.

19. A control and display device according to Claim 18, wherein to support the control and display device, the housing includes at least one reinforcing strip made of a same material as the housing, and is connected to the housing forming a single piece.

20. A control and display device according to Claim 19, wherein the housing is open on at least one side, the open side, and the open side is closed by a cover.

21. A control and display device according to Claim 20, wherein a pivotable cover is pivotingly arranged on one of the housing and the sleeve by a hinge device.

22. A control and display device according to Claim 21, wherein the pivotable cover is closed via a locking device.

5 23. A control and display device according to one Claim 22, further including at least one cover made of the same material as the housing.

24. A control and display device according to Claim 23, wherein the housing has a reduced wall thickness in an area of the keyboard when compared to a wall thickness outside the
10 keyboard area.

25. A control and display device according to Claim 24, wherein the keyboard and the housing are made of the same material and are connected to one another to form one piece.

15 26. A control and display device according to Claim 25, wherein the housing includes recesses for attaching the control and display device to an appropriate bracket.

27. A control and display device according to Claim 26, wherein the housing includes at least one opening through which an electric conductor is introduced in the control and display
20 device through a water-tight connection.

28. The control and display device according to Claim 26, wherein the housing includes at least one opening through which at least one plug-and-socket connection is inserted into the control and display device.

5

29. A control and display device according to Claim 27, wherein there is a sealing lip in the at least one opening which is in water-tight contact with an inserted plug.

30. A control and display device according to Claim 29, wherein the housing is made
10 of a plastic hose.

31. A control and display device according to Claim 30, wherein the housing and the cover have open ends on one side with stepped areas which can be fitted into one another with great accuracy.

15

32. A control and display device according to Claim 31, further including at least one additional sealing lip for sealing the stepped areas between the cover and the housing.

33. A control and display device according to Claim 31, further including depressions
20 into which at least one of the sealing lips and the additional sealing lips engage.

34. An instrument comprising:

a single one-piece housing providing water-tight protection from the outside surface of
said single one-piece housing; and

5 a sealing device for sealing the single one-piece housing.

35. The instrument of Claim 34, wherein said housing is made of a temperature resistant
material.

10 36. The instrument of Claim 35, wherein the sealing device is designed such that a
direction of sealing forces determined by said sealing device is essentially perpendicular to a
direction of joining forces determined by a direction of inserting one of the housing and a sleeve
into the other.

15 37. The instrument of Claim 36, wherein a surface area of sealing surface is small.

38. The instrument of Claim 35, further including a sleeve being enclosed by said
housing.

20 39. The instrument of Claim 38, wherein said sleeve has at least one open end sealed by
a cover.

40. The instrument of Claim 39, wherein said sleeve provides internal support to accommodate at least one functional element.

5 41. The instrument of Claim 40, wherein said at least one functional element is one of a circuit board, indicator panel, keyboard, and power supply.

 42. The instrument of Claim 41, wherein said housing is made of one of a semi-transparent material and a fully transparent material allowing viewing of markings in connection
10 with said at least one functional element.

 43. The instrument of Claim 42, wherein said housing encloses said sleeve in an essentially snug fitting manner.

15 44. The instrument of Claim 35, wherein said housing is made of one of TPU, TPE, and PVC.

 45. The instrument of Claim 35, wherein said housing is injection molded

20 46. The instrument of Claim 35, wherein said housing encloses a sleeve and said sealing device includes a peripheral ridge near a base of said sleeve, said peripheral ridge engaging in a

corresponding groove formed near an open end of said housing.

47. The instrument of Claim 46, wherein said sealing device further includes a sealing lip in close contact with said groove of said housing.

5

48. The instrument of Claim 47, wherein said sealing lip is one of pointed, and nub-like.

49. The instrument of Claim 47, wherein said sealing lip is designed as one of a wedge-shaped annular seal, and a rib-shaped annular seal surrounding said groove.

10

50. The instrument of Claim 49, wherein said sealing lip is made of a material at least as hard as said material of said groove.

15 51. The instrument of Claim 49, wherein said sealing lip is made of a material softer than said material of said groove producing a sealing effect by an appropriate pressure contact therewith.

52. The instrument of Claim 35, wherein said housing includes a first area having a reduced wall thickness in comparison to other portions of said housing.

20

53. The instrument of Claim 52, wherein said first area is associated with a functional

device, said housing includes a transparent portion over said functional device.

54. The instrument of Claim 34, wherein said housing includes two open end faces arranged opposite each other each closed by a cover, each of said open end faces being sealed with a sealing device.

5

55. The instrument of Claim 54, wherein said sealing devices include a fixed ring attached to the cover, said ring engaging in said housing when said ring is pushed into said housing forming a seal.

10

56. The instrument of Claim 55, wherein said ring is cylindrical in shape slightly tapering in direction of insertion.

57. The instrument of Claim 56, wherein said ring has a support device for stabilizing said ring.

15

58. The instrument of Claim 57, wherein said ring has one of a sealing lip and sealing spring designed as a pointed tip engaging said housing in a downward direction when the ring is inserted in a horizontal direction.

20

59. The instrument of Claim 34, wherein said sealing device is a component of a sleeve enclosed in said housing, said sealing device including a plug connected to said sleeve near an

end of said sleeve.

WEM-05001

60. The instrument of Claim 59, wherein said plug includes at least one sealing lip engaging said housing.

5

61. The instrument of Claim 60, wherein said sealing lip is one of a pointed tip and a wedge-shaped peripheral.

62. The instrument of Claim 61, wherein said sealing device includes a depression in which said at least one sealing lip engages, said depression being included in said housing.

10

63. The instrument of Claim 34, wherein said sealing device includes a cover, a sealing lip, and a sleeve, said housing and said cover having stepped areas at open ends matching one another, said sealing lip engaging in said housing providing a tight connection between said housing and said cover and being arranged in said stepped area of said housing.

15

64. The instrument of Claim 34, wherein said sealing device includes a cover, a sealing lip, and a sleeve, said cover being attached to said housing by a hinge device, said sleeve including a depression in an area where said sealing lip is to engage said sleeve, said sealing lip being applied to said housing to seal said housing with said sleeve.

20